

GDD 314: VR/AR Development for Games

COURSE INFO	<p>GDD 314 Spring 2026 Monday - Wednesday, 10:30 am - 11:45 am SITE 102 http://mywebspace.quinnipiac.edu/jbwarren/314</p>
INSTRUCTOR INFO	<p>Jonah Warren jonah.warren@quinnipiac.edu 203.582.7921 CAS I 339</p>
OFFICE HOURS	<p>My office hours are: Monday, 12 pm - 2:30 pm</p> <p>All other times by appointment. I'm available via email during the week (Monday-Friday) and will try to respond to emails within 48 hours. Emails received on the weekend will be responded to by the beginning of the following week.</p>
DESCRIPTION	<p>This course is an exploration into the potentials of augmented and virtual reality in play and games. Students will learn the skills to design and develop virtual reality applications for dedicated headsets and augmented reality applications for smartphones in Unity.</p>
LEARNING OUTCOMES	<p>Students in GDD 314 will:</p> <ul style="list-style-type: none">• Learn about the history of augmented and virtual reality;• investigate the unique affordances and constraints of each technology;• examine the current landscape of augmented reality and virtual reality applications;• learn how to develop virtual reality applications in Unity;• learn how to develop augmented reality applications in Unity;• further explore XR through a self-directed final project.
STRUCTURE	<p>The semester will be divided into three parts. The first third of the semester students will research existing VR applications, learn how to develop applications for VR headsets, and complete two small prototypes. The second third of the semester will follow a similar structure but for AR applications: research the current state of AR, learn the tools for creating applications, and complete two prototypes. During the last third of the semester, students will form small teams and continue development on a prototype of their choice, turning it into a fully functional application.</p>
PHILOSOPHY	<p>Video games and new technologies are often thought to go hand in hand. Unfortunately, more often than not, new technologies in games are shoehorned into existing genres or paradigms rather than being explored on their own terms. This course encourages students to do the opposite — to explore XR technologies</p>

with an open mind, letting the exploration of the possibility space lead the design process.

WEBSITES

Our class website is:

<http://mywebspace.quinnipiac.edu/jbwarren/314>

A shortcut to the site is: <http://bit.ly/gdd-314>. Students must post assignments to their website on mywebspace. Please create a folder for the class named 314.

EQUIPMENT

During the course of the semester, you may be loaned equipment to use (e.g., VR headsets, cables, controllers). Please be careful with it. It is expected that all loaned equipment be returned (including all cables, chargers, controllers, boxes) in the same condition as when it was issued. If equipment is lost or damaged a hold may be placed with the bursar until you reimburse the department for the cost of the lost or damaged items.

SOFTWARE

We will be using Unity to create VR and AR applications. If you'd like to use Unreal or some other engine, that should be fine, but please let me know. You can find Unity here: <http://unity3d.com/unity/download>. You may also complete coursework working in the lab. Each workstation in the GDD Lab has all the software needed to complete required assignments.

GDD STORAGE

GDD is a program in which you will be generating a great deal of digital content. Safe storage of this material is essential to your success in the GDD program. We recommend using One Drive accessible through your Outlook email account, but it is essential that you also have your own external drive in which you keep current and backup files for all of your work. Do not leave materials on the hard drives of the machines in the lab as these machines can crash or have the drives wiped unpredictably. As professionals in this field we expect you to understand that lost or damaged files are not an excuse for missing or late work. Backup your work and archive it regularly.

STUDENT WORK

GDD keeps an archive of student work which may be displayed on the program website and used to publicize and promote our students and our program. At the end of each semester, you are responsible for turning in your completed projects with all associated code and media, to your professor. For your final project, you should also turn in a video of gameplay. Make sure all media is accurately credited. You should also have a website that GDD will link to from the student page of the GDD site that provides links to your bio and completed projects.

LAB RULES

No eating in the lab. No cellphone use during class time. No working on projects, browsing the web or watching YouTube while other students are making presentations or during class discussions. This is extremely disrespectful towards your classmates and will negatively impact your grade.

SCHEDULE

WEEK 1 – Intros, Course structure

WEEK 2 – Introduction to VR, Readings, Looking outward presentations

WEEK 3 – VR Unity set up, Devices, Development environment overview

WEEK 4 – Grabbing, Raycasting

WEEK 5 – Locomotion

WEEK 6 – UI inVR
 WEEK 7 – Introduction to AR, Readings, Looking outward presentations
 WEEK 8 – AR Unity set up, Devices, Development environment overview
 WEEK 9 – Plane detection, Hit testing
 WEEK 10 – Image tracking, Face tracking
 WEEK 11 – UI in AR
 WEEK 12 – Final Project: Proposals
 WEEK 13 – Main Project: Playtest and Iterate
 WEEK 14 – Main Project: Playtest and Iterate
 FINAL EXAM – Main Project: Final Presentations

FINAL We will meet during the scheduled exam period for final project presentations. Attendance is required, so make your travel plans accordingly.

GRADE BREAKDOWN Your total grade will be calculated according to the following breakdown:

125 VR Presentation (25 pts Tracking Video)
 150 VR | Project 1
 150 VR | Project 2
 125 AR Presentation (25 pts Tracking Video)
 150 AR | Project 1
 200 Final Project
 100 Professionalism

If you do not show up for your final presentation without notifying me prior, you will fail the final project. If the grade breakdown changes, the class will be notified and the syllabus updated.

GRADING RUBRIC Each grade you get will be broken down into categories. Each of those categories will be evaluated using the following metrics: Exceeds Expectations (100%), Meets Expectations (80%), Approaches Expectations (60%), Does Not Meet Expectations (40%), or Not Attempted (0%). The rubric for each assignment can be found on Blackboard. Here's an example rubric for project grades.

	Does Not Meet Expectations (40%)	Approaches Expectations (65%)	Meets Expectations (85%)	Exceeds Expectations (100%)
Creativity (20%)	Feels like a copy of an existing game.	Close to an existing game. Potentially entails small alterations that aren't meaningfully significant.	Combining existing ideas effectively. Feels like its own experience.	Unique and different. Combining ideas in new and interesting ways, resulting in unanticipated opportunities.
Technology (20%)	No consideration of the technology. Potentially better suited for a different platform.	Could do a better job working with affordances and considering constraints.	The experience is designed so that it takes advantage of the technology's unique opportunities.	Very smart, thoughtful use of affordances and constraints. Could only exist on this platform.

Experience (40%)	A repetitive, tedious, or unintentionally confusing experience.	Has moments which keep the player's attention, but fails to do so for an extended period of time. Possible usability, level design, and/or progression issues.	A nicely designed, engaging experience. The player is incentivized to continue playing. Good in-game player feedback.	Provides a very engaging experience through thoughtful, well-designed gameplay and feedback. Keeps the player's attention by providing increasingly interesting challenges and/or choices.
Professionalism (20%)	Hastily-made, sloppy work.	Looking for more attention and care. Inconsistent and unprofessional.	Good attention to detail. No cut off UI, blurry text, or sloppy, uncommented code.	Exceptional attention to detail. All screens are well-designed, code is well-written and commented, and its design consistent and considered.

Here is an example assignment grade, worth 70pts:

Creativity (20%)	×	Meets Expectations (85%)	×	70 = 11.9pts
Technology (20%)	×	Exceeds Expectations (100%)	×	70 = 14pts
Experience (40%)	×	Meets Expectations (85%)	×	70 = 23.8pts
Professionalism (20%)	×	Exceeds Expectations (100%)	×	70 = 14pts

63.7pts (91%)

***Professionalism Grades:**

Your professionalism grade will use the Quinnipiac Grading Scale below and be based on your conduct in class, attendance, punctuality, participation, general engagement, respect for the learning environment and respect for your classmates and your teammates. If do not contribute, watch YouTube videos during critique, or are regularly disrespectful of your teammates do not expect a passing grade. You will lose two points from this grade if you have your phone out during class discussion.

CHECKING GRADES

It is your responsibility to keep track of your grades throughout the semester. Grades will be posted on Blackboard and may be checked at any time. If you are not doing as well as you would like to be, you can meet with me to discuss extra credit projects BEFORE the semester ends. If you feel that I have made a mistake recording a grade or failed to enter a grade that you earned correctly, please email me so that I can correct it. Do not contact me just because you want a higher grade on a graded assignment.

GRADING SCALE

Your final letter grade is based on the Quinnipiac Grading Scale as follows:

A 93-100	B+ 87-89	B- 80-82	C 73-76	D 60-69
A- 90-92	B 83-86	C+ 77-79	C- 70-72	F 0-59

NOTE: A grade of C- or better is required in all game design and development

courses and prerequisites. Students with a GPA of less than 2.0 will be put on probation. After two semesters on probation, students will be advised to change majors.

PLAGIARISM

All the work you do for class must be your own unless you cite it. Clearly provide links to any code, art, music, or sound you use to complete assignments. This is especially important regarding the use of tutorials and using other people's code. If you use a tutorial from the web that includes code, I expect you to be able to explain how each line of code works, notify me that you are using a tutorial, and provide a link to that tutorial. If you fail to cite your sources, it will be assumed that you are trying to pass off the work as your own and it will be considered plagiarism. This will result in a zero on the assignment, notifying the Academic Integrity Board and a permanent record in your file. See below for more information about Quinnipiac's Academic Integrity policy.

ACADEMIC INTEGRITY

QU is committed to integrity and honesty in the educational process. As a member of the campus community and a student enrolled in this course, you agree to know and observe the university's Academic Integrity & Accountability (AIA) Policy. Academic misconduct includes, but is not limited to, cheating, facilitation, fabrication, unauthorized collaboration, and plagiarism. You must produce original work and know what constitutes plagiarism. You must also know what constitutes cheating. If you are not certain what sources you can rely on when completing an assignment or exam, including any online assessment, you should contact me for clarification. All assignments you submit in this class must be original work completed by you for this specific course. A failure to abide by the AIA Policy could lead to a grade penalty on the assessment, failure in the course, an "FAI" notation on your transcript, AIA probation, suspension or any other sanction outlined in the university's AIA Policy. If you have questions about what constitutes academic misconduct, please contact the course instructor or the Office of Academic Integrity & Accountability at integrity@qu.edu.